CLAIMS

What is Claimed is:

1.   A method comprising:

stalling a heap allocation function call to a heap
5   allocation function originating from a request by an
application for a block of heap buffer;

predicting a predicted block of said heap buffer to
fulfill said request; and

determining if a forward link (F-link) and a backward
10   link (B-link) of said predicted block are addresses within a
heap segment associated with said predicted block.

2.   The method of Claim 1 further comprising hooking
said heap allocation function.
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3.   The method of Claim 1 further comprising determining
a size of said block.

4.   The method of Claim 3 wherein said predicted block
20   has said size.

5.   The method of Claim 3 wherein a freelist comprises a
plurality of free blocks having said size, said predicted
block being on said freelist.
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6.   The method of Claim 1 wherein said predicted block
is on a predicted freelist.

7.   The method of Claim 6 further comprising determining
30   whether a F-link of a predicted list head of said predicted
freelist points into said heap segment.

8.   The method of Claim 6 further comprising determining
whether a B-link of a predicted next block of said predicted
35   freelist points into said heap segment.

9. The method of Claim 1 wherein upon a determination that said F-link and said B-link of said predicted block are not addresses within said heap segment, said method further comprising taking corrective action.

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10. The method of Claim 9 wherein said taking corrective action comprises setting said F-link and said B-link to be an address of a list head of a freelist comprising said predicted block.

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11. A method comprising:

stalling a heap deallocation function call to a heap deallocation function originating from a release by an application of a block of heap buffer, wherein said block is

15 a deallocation block that is being deallocated to a deallocation freelist; and

determining if a forward link (F-link) of a list head of said deallocation freelist and a backward link (B-link) of a first block of said deallocation freelist are addresses

20 within a heap segment associated with said deallocation freelist.

12. The method of Claim 11 further comprising reading said F-link and said B-link.

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13. The method of Claim 11 further comprising hooking said heap deallocation function.

14. The method of Claim 11 further comprising

30 determining said block.

15. The method of Claim 11 wherein upon a determination that said F-link and said B-link are addresses within said heap segment, said method further comprising releasing said

35 heap deallocation function call.

16.   The method of Claim 11 wherein upon a determination that said F-link or said B-link are not addresses within said heap segment, said method further comprising taking corrective action.

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17.   The method of Claim 11 wherein said F-link or said B-link is a stray F-link or stray B-link, said method further comprising determining if said stray F-link or stray B-link is a known false positive.

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18.   The method of Claim 11 further comprising determining if said block is to be coalesced with other free blocks.

15   19.   The method of Claim 11 wherein said block is to be coalesced with a coalesced block, said method further comprising:
    determining if a F-link and a B-link of said coalesced block are addresses within a heap segment associated with
20   said coalesced block.

21.   A method comprising:
    determining that a freelist comprising a list head, a first free block and a second free block is corrupt; and
    determining if said list head is corrupt, wherein upon a
30   determination that said list head is corrupt, said method further comprising:
    setting a forward link (F-link) and a backward link (B-link) of said list head to an address of said list head.

35   22.   The method of Claim 21 wherein upon a determination that said list head is not corrupt, said method further comprising:

determining if said first free block is corrupt.

23.   The method of Claim 22 wherein upon a determination
that said first free block is corrupt, said method further
5   comprising:
setting a F-link and a B-link of said first free block
to said address of said list head; and
setting said B-link of said list head to an address of
said first free block.
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24.   The method of Claim 22 wherein upon a determination
that said first free block is not corrupt, said method
further comprising:
setting a F-link of said second free block to said
15   address of said list head;
setting a B-link of said second free block to an address
of said first free block; and
setting said B-link of said list head to an address of
said second free block.
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25.   A computer-program product comprising a computer-
readable medium containing computer program code comprising:
a heap buffer overflow exploitation prevention
application for stalling a heap allocation function call to a
25   heap allocation function originating from a request by an
application for a block of heap buffer;
said heap buffer overflow exploitation prevention
application further for predicting a predicted block of said
heap buffer to fulfill said request; and
30   said heap buffer overflow exploitation prevention
application further for determining if a forward link (F-
link) and a backward link (B-link) of said predicted block
are addresses within a heap segment associated with said
predicted block.
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